GADGET Student Experiments on SEM: A Retrospective Look at the Experiments of Flights STS-80, STS-85, and STS-95

Presented by

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What is GADGET?

Glenbrook **A**erospace **D**evelopment
Get-away **E**xperiment **T**eam

Founded in 1994

Purpose

- Provide Students with:
  - Microgravity experiment opportunities
  - Real-world scientific experiences
- Find answers through own research

Experiments

- 4 Active SEM
- 96 Passive SEM
- 1 Active Sub-SEM (ground testing)
- 3 Mid-Deck Experiments

Active Experiments

- Mosquitoes-Phase II
- Surface Tension I
- Surface Tension II
- Crystal Growth - Parma High School

Mosquitoes-Phase II

- STS-85
- Life cycle of mosquitoes in microgravity
- Lessons learned:
  - Difficulties of biological experiments
  - Scientific cooperation

Surface Tension I

- STS-80, STS-85, and STS-95
- Viscosity and absorbency
- First mechanically-produced painting in space
- Lessons learned:
  - Interdisciplinary cooperation
  - Mechanical redundancy

Surface Tension II

- STS-85
- Viscosity of thicker substances
- Lessons learned:
  - Physical limitations
  - Timing

Crystal Growth

- STS-85
- Sent by Parma High School
- Grow lysozyme crystals
- Lessons learned
  - Chemical limitations

Future Active Experiments

- 3-D Resonance
- Aeroponics
- Environment
  - Conditions in GAS Can
  - Useful Data

Passive Experiments

- SEM
  - 74 on STS-80
  - 22 on STS-85
  - 30 on STS-101

Examples

- STS-80
- Film with paper clip
  - Radiation Levels

Examples

- STS-80 & STS-85
- Plant Seeds
  - Effects of Space
  - Accelerated Growth

Examples

- STS-80 and STS-85
  - Hair, Fur, and Feathers
    - Color Change

Outreach Program

- Grammar school student oriented
- Emphasizes importance of scientific method
- Provides experiment opportunities

GADGET

- Many unsuccessful experiments
- Many lessons learned
- Process versus product

GADGET

- Fosters interest in science
- Promotes:
  - Creativity
  - Working within SEM limitations
  - Problem Solving
  - Organization
- Scientific method

THE SKY IS NOT THE LIMIT!